

SN-93-71875

157469

P. 3

# SPACE PROPULSION TECHNOLOGY PROGRAM OVERVIEW

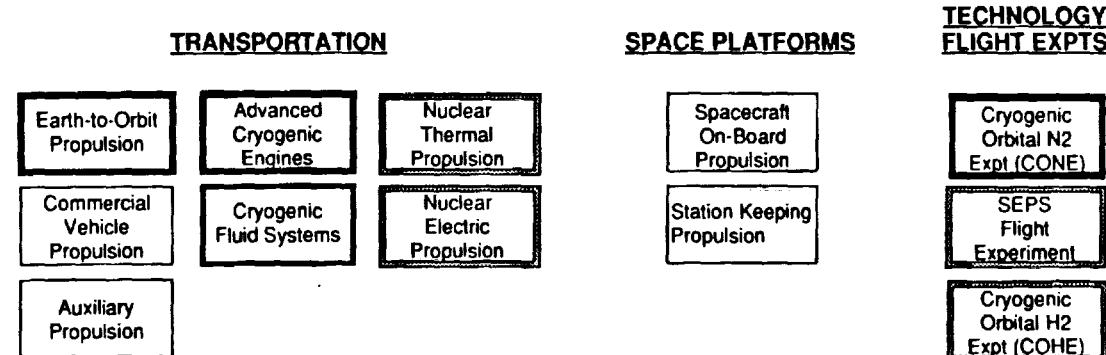
William J. D. Escher  
Manager, ETO & ACE  
Propulsion R&T Programs  
SSTAC/ARTS Meeting  
June 24-28, 1991

## PROGRAM ELEMENT MATURITY, EXTENT PLANNED

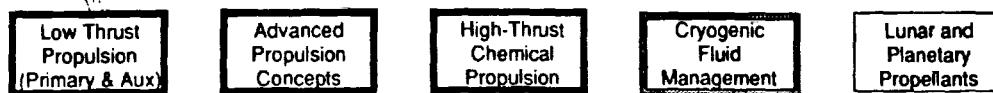
OAET

SPACE PROPULSION

### Focused Program Elements



### Base R&T



- Ongoing, Extensively Planned (With Updating)
- Recent-start, Planning Mostly Underway
- Prospective, Basically Unplanned

**FOCUSED PROGRAMS FUNDING**  
(\$M)

		<b>SPACE PROPULSION</b>						
<b>PROGRAM ELEMENT</b>		<b>FY1991</b>	<b>FY1992</b>	<b>FY1993</b>	<b>FY1994</b>	<b>FY1995</b>	<b>FY1996</b>	<b>FY1997</b>
ETO PROPULSION	Current	21.8	28.7	33.9	25.1	26.4	27.6	28.8
	3X	21.8	28.7	33.9	25.1	26.4	27.6	28.8
	Strategic	21.8	28.7	33.9	35.4	36.9	42.7	45.1
COMMERCIAL VEHICLE PROPULSION	Current	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3X	0.0	4.2	10.0	17.0	23.0	29.0	28.8
	Strategic	0.0	0.0	12.0	15.0	44.1	57.7	47.1
AUX PROPULSION	Current	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3X	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Strategic	0.0	0.0	0.0	2.3	5.4	10.9	15.9
ADV CRYO ENGINE	Current	4.0	9.0	12.6	13.2	14.0	14.7	15.4
	3X	4.0	9.0	14.9	16.7	19.6	20.2	28.0
	Strategic	4.0	9.0	15.0	24.0	31.0	45.8	42.4
CRYO FLUID SYSTEMS	Current	1.5	0.0	0.0	0.0	0.0	0.0	0.0
	3X	1.5	0.0	7.4	10.0	10.3	10.8	10.0
	Strategic	1.5	0.0	8.5	11.0	11.3	11.8	11.0
NUCLEAR THERMAL	Current	0.5	5.0	13.0	22.0	39.0	50.3	52.6
	3X	0.5	5.0	13.0	22.0	39.0	50.3	52.6
	Strategic	0.5	5.0	13.0	22.0	39.0	50.3	83.0
NUCLEAR ELECTRIC	Current	0.0	2.0	6.0	15.9	23.0	26.0	27.2
	3X	0.0	2.0	6.0	15.9	23.0	26.0	27.2
	Strategic	0.0	2.0	6.0	15.9	23.0	26.0	45.0

**FOCUSED PROGRAMS FUNDING (Cont'd)**  
(\$M)

		<b>SPACE PROPULSION</b>						
<b>PROGRAM ELEMENT</b>		<b>FY1991</b>	<b>FY1992</b>	<b>FY1993</b>	<b>FY1994</b>	<b>FY1995</b>	<b>FY1996</b>	<b>FY1997</b>
STATION-KEEPING PROPULSION	Current	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3X	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Strategic	0.0	0.0	2.9	4.4	3.6	0.9	0.0
S/C ON-BOARD PROP	Current	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3X	0.0	0.0	1.0	3.0	4.3	1.2	0.0
	Strategic	0.0	0.0	1.2	3.0	4.3	1.2	0.0
CONE FLT EXPT	Current	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3X	0.0	0.0	3.3	14.8	23.5	26.0	27.2
	Strategic	0.0	0.0	3.4	19.4	24.6	25.0	14.5
SEPS FLT EXPT	Current	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3X	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Strategic	0.0	0.0	6.3	11.6	11.5	7.6	0.9
COHE FLT EXPT	Current	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	3X	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Strategic	0.0	0.0	0.0	0.0	0.0	3.6	17.0
<b>TOTALS</b>	Current	<u>27.8</u>	<u>44.7</u>	<u>65.5</u>	<u>76.2</u>	<u>102.4</u>	<u>118.6</u>	<u>124.0</u>
	3X	<u>27.8</u>	<u>44.7</u>	<u>83.7</u>	<u>117.5</u>	<u>163.1</u>	<u>182.1</u>	<u>194.3</u>
	Strategic	<u>27.8</u>	<u>44.7</u>	<u>102.2</u>	<u>164.0</u>	<u>234.7</u>	<u>283.5</u>	<u>321.9</u>

**PROPULSION R&T BASE FUNDING**  
(\$M)

<b>CAET</b>		<b>SPACE PROPULSION</b>						
<b>SUB-ELEMENTS</b>		<b>FY1991</b>	<b>FY1992</b>	<b>FY1993</b>	<b>FY1994</b>	<b>FY1995</b>	<b>FY1996</b>	<b>FY1997</b>
LOW THRUST PROPULSION	Current	5.8	5.2	5.4	5.6	5.8	6.1	6.3
	3X	5.8	5.2	7.0	9.8	11.0	12.5	14.5
	Strategic	5.8	5.2	8.0	11.0	11.0	12.5	14.5
ADVANCED CONCEPTS	Current	1.2	1.4	1.5	1.5	1.6	1.6	1.7
	3X	1.2	1.4	3.2	4.0	4.7	5.0	6.0
	Strategic	1.2	1.4	3.5	4.0	4.7	5.0	6.0
HIGH-THRUST CHEMICAL	Current	3.5	3.5	3.6	3.8	3.9	4.1	4.3
	3X	3.5	3.5	4.0	5.5	6.6	7.1	7.4
	Strategic	3.5	3.5	4.8	6.1	7.4	8.2	9.2
CRYO FLUID MANAGEMENT	Current	1.5	2.6	2.0	2.1	2.2	2.2	2.3
	3X	1.5	2.6	2.1	2.2	2.3	2.4	2.5
	Strategic	1.5	2.6	2.1	2.2	2.3	2.4	2.5
<b>SUB-ELEMENT TOTALS</b>		<b>12.0</b>	<b>12.7</b>	<b>12.5</b>	<b>13.0</b>	<b>13.5</b>	<b>14.0</b>	<b>14.6</b>
		<b>12.0</b>	<b>12.7</b>	<b>16.3</b>	<b>21.5</b>	<b>24.6</b>	<b>27.0</b>	<b>30.4</b>
		<b>12.0</b>	<b>12.7</b>	<b>18.4</b>	<b>23.3</b>	<b>27.4</b>	<b>31.2</b>	<b>36.2</b>
PROGRAM SUPPORT	Current	2.4	2.5	2.6	2.7	2.8	2.9	3.0
	3X	2.4	2.5	2.3	2.6	3.0	3.2	3.6
	Strategic	2.4	2.5	2.3	2.9	3.4	3.8	4.4
SPECIAL REQUIREMENTS	Current	0.4	1.5	2.1	2.3	2.5	2.8	3.0
	3X	0.4	1.5	1.8	2.1	2.5	2.7	2.9
	Strategic	0.4	1.5	2.3	2.5	2.9	3.0	3.3
<b>TOTALS</b>		<b>14.8</b>	<b>16.7</b>	<b>17.2</b>	<b>18.0</b>	<b>18.8</b>	<b>19.7</b>	<b>20.6</b>
		<b>14.8</b>	<b>16.7</b>	<b>20.4</b>	<b>26.2</b>	<b>30.1</b>	<b>32.9</b>	<b>36.9</b>
		<b>14.8</b>	<b>16.7</b>	<b>23.0</b>	<b>28.7</b>	<b>33.7</b>	<b>38.0</b>	<b>43.9</b>